REMARKS

Applicants thank the Examiner for continued attention to this application.

Claim amendments

Claims 1-26 are pending.

Independent claims 12, 15 and 26 have been amended for clarifying the cable modem network and the feature of the address assignment handler or address assignment step. Support for the amendments can be found in the application as originally filed, e.g., page 6, line 15-18, page 11, lines 8-20, page 12, lines 12-16, and page 14, lines 30 to page 15, line 4 of the specification.

Claims 1-3 have been cancelled.

Claims 4 and 10 have been amended to depend on claim 12.

Dependent claims 4, 11 and 18 have been amended in view of the amendments made to their parent claims.

No new matter has been introduced into the application by these amendments.

Rejection under 35 USC §103

The Examiner has rejected claims 1-26 under 35 U.S.C. 103, alleging that these claims are unpatentable over Wilson (Pub. No. US 2001/0054101 A1, hereinafter "Wilson") in view of Beser (US patent No. 6,189,102 B1) and further in view of Schutte et al. (Patent No. 6,178,445 B1, hereinafter "Schutte").

Applicants respectfully request reconsideration of the rejection for the reasons set out below based on the amended claims.

Claims 1-3 have been cancelled.

Independent claim 12

Amended claim 12 provides a network service management server for managing network services for a cable modem network. The cable modem network has multiple cable modems and routing Cable Modem Termination Systems (CMTSs) for communicating with connected cable modems. The CMTSs are provided at the selected location and the cable modems are provided at remote locations outside the selected location. The network service management server has at a selected location of the cable modem network a registration driver and an address assignment handler. The registration driver registers a client connecting to one of the cable modems. The address assignment handler assigns client Internet protocol (IP) address ranges and cable modem IP address ranges to each of the routing CMTSs using the registration driver. In response to a client response, the address assignment handler assigns to the client a client IP address from the client IP address ranges assigned to one of the routing CMTSs associated with the one of the cable modems to which the client is connected.

Thus, the client is assigned with an IP address that is associated with the routing CMTS to which the client is connected through one of the cable modems.

As the Examiner has noted, Wilson does not disclose a registration driver provided at a selected location of the internal network, the internal network being operated by a multi-system operator and formed with network entities, the registration driver for registering a client connecting to one of the network entities, and address assignment handler provided at the selected location of the internal network for

assigning to the client an address associated with the one of the network entities to which the client is connected.

The Examiner has cited Beser to show an internal network being operated by a multi-system operator and formed with network entities, and a registration driver, registration driver for registering a client connecting to one of the network entities.

Beser describes a cable network which is served by a Cable Modem Termination System (CMTS) and various IP provisioning facilities. However, Beser utilizes these stored addresses only to authenticate modems and their associated end-users, in order to prevent some forms of network intrusion (column 4, lines 28-49, Fig. 19). Beser's CMTS stores the Internet Protocol address for the customer premise equipment and a Medium Access Protocol address for the cable modem in an internal table (column 4, lines 34-38). These stored address are used to determine if the system allows registration of the customer premise equipment or reject registration of it, i.e., for authentication (column 4, lines 50-56), rather than authorization. In contrast, the present invention registers the client for handling information relating to Internet services for the client based on the assigned client address, i.e., performing authorization.

In addition, Beser requires access to network entity MAC addresses in order to perform its duties (column 4, lines 43-49). This is contrary to the present invention which does not require network entity MAC addresses to achieve its purpose.

As the Examiner has indicated, Beser does not teach or suggest an address assignment handler provided at the selected location of the cable modem network and assigning of client Internet protocol (IP) address ranges and cable modem IP address ranges to each of the routing CMTSs using the registration driver, or assigning of a client IP address to a client from the client IP address ranges

assigned to one of the routing CMTSs associated with the one of the cable modems to which the client is connected.

Since both Wilson and Beser fail to teach or suggest such an address assignment handler, the Examiner has cited Schutte.

Schutte teaches a cable data network having a head end that dynamically assigns a set of IP addresses to a cable router or RF modem. The RF modem functions as a router (column 5, lines 62-64).

The Examiner contends that Schutte's Abstract refers to a CMTS as a "cable router": However, a "cable router" is generally known to be a device which resides behind the CMTS near the cable modem, or replaces the cable modem entirely. Thus, Schutte's network contains multiple routing cable modems, rather than routing CMTSs. Schutte does not describe a network which contains routing CMTSs, as recited in amended claim 12 of the present application.

Each of Schutte's modems requests a set of IP addresses for first-come-first-served allocation by the modem to all of the end-users that the modem may need to support (column 11, lines 59-64 and column 16, lines 39-59). Schutte's modems reside within various subnetworks within the cable network, where subnetworks are defined by RF (radio frequency) parameters as well as by IP address partitions. Schutte's cable routers are near the modems within those subnetworks, rather than at a selected location and the cable modems, as recited in amended claim 12 of the present application.

Schutte describes a DHCP server 1201 and an IP address manager 1204 which serve the network. However, these are different from the address assignment handler of the present invention.

As recited in amended claim 12 of the present application, the address assignment handler is provided at the selected location of the cable modem network and performs the IP assignment. Thus, the router-aware IP assignment is carried out a the selected location of the network at the CMTS level, not at the modem level. The address assignment handler assigns IP addresses to clients, in response to client requests. Thus, the network service management server of the present invention is capable of processing DHCP requests which have passed through the routers.

In contrast, Schutte's DHCP server never receives user requests. Schutte's routing modems are visible to the DHCP server and the IP address manager. Schutte's IP assignment facility sees multiple routing devices, although the fact that the modems are routers is largely irrelevant to Schutte's DHCP server and IP address pool manager. These routing modems act as proxy DHCP servers to the users behind them: each modem requests its own IP address, plus a set of end-user IP addresses, from the network's central DHCP server. The modem then acts as a local DHCP server to its end-users, by assigning to those end-users the IP addresses which comprise the set of user IP addresses that the modem requested from the central DHCP server. The modem then routes the end-user traffic to the head-end of the network, through one or more pathways. The head-end processes the routed end-user traffic (column 16, line 25 to column 17, line 47).

In addition, Schutte's modems request the sets of end-user IP addresses using a vendor-specific extension to the DHCP protocol (column16, lines 45-56). This requires the modems to be running a specialized firmware which supports Schutte's particular provisioning scheme. The present invention does not require the modems to know how to interact with the present invention.

Accordingly, Schutte fails to teach or suggest the registration driver and address assignment handler recited in amended claim 12 of the present application.

Since none of the cited references teach the registration driver and address assignment handler of amended claim 12, even if one skilled in the art attempts to combine the teaching of Wilson, Beser and Schutte, he would still fail to achieve the network service management server recited in amended claim 12 of the present application.

Therefore, it is respectfully submitted that amended claim 12 is patentable over Wilson, Beser and Schutte.

Independent Claims 15 and 26

Independent claims 15 and 26 have been amended to recite the IP address assigning features, as in amended claim 12.

Accordingly, for the reasons set out above, amended claims 15 and 26 have been also patentably distinguished over Wilson, Beser and Schutte.

Dependent claims 4-11, 13-14 and 16-25

Claims 4-11, 13-14 and 16-25 directly or indirectly depend on amended claims 12 and 15, respectively.

Accordingly, for the reasons set out above, these dependent claims are also patentable over Wilson, Beser and Schutte.

Especially, claims 4, 5, 9, 18, 19 and 23 recite a location resolution handler or a location resolving step. The location resolution handler obtains a cable modem MAC address from network traffic sent from or to a client connected to the cable modem, and resolves the location of the client based on the location information of the cable modem using the client IP address or MAC address.

None of the cited references teach such resolution of a cable modem. For example, in Schutte, each modem is known to the network's provisioning facilities. When the modem initializes and requests its own IP address, the end-user behind that modem submits authentication data to the head-end of the network, i.e., a login for each modem, performed by the first user behind the modem (column 17, line 65 to column 18, line 9). Thus, the network's provisioning facilities of Schutte must be manually preconfigured with information about each of the modems, in order for the modems to function.

Therefore, Applicants respectfully submit that the present invention as recited in claims 4-26 as amended has been patentably distinguished over the references on record.

Conclusion

Having dealt with all objections, Applicants respectfully submit that the application is now in condition for allowance. However, if any questions remain, or it is deemed that the foregoing does not fully comply with the requirements set forth in the Office action, it is respectfully requested that the undersigned be contacted by telephone so that any issues can be resolved prior to the issuance of a subsequent Office action.

Early and favorable reconsideration of the application is respectfully requested.

Respectfully submitted,

Arthur G. Schaier, Reg. No. 37,715
Carmody & Torrance LLP
50 Leavenworth Street
P.O. Box 1110
Waterbury, CT 06721-1110
Telephone: (203) 575-2629
Facsimile: (203) 575-2600